TISSUE REPAIR ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation application of U.S. Ser. No. 12/631,960 filed Dec. 7, 2009, which is currently pending, which claims the benefit of U.S. Patent Application Ser. No. 61/120,898 filed on Dec. 9, 2008, the disclosures of which are incorporated herein by reference in their entirety.

BACKGROUND

1. Field of Technology

The present disclosure relates generally to soft tissue repair, and more specifically, devices and methods used for such repair.

2. Related Art

Current devices available for arthroscopic soft tissue repair include suture anchors, metal post and washer screws, and interference screws. These devices provide immediate fixation of the tissue to the bone with little postoperative activity modification. However, the tissue must be delivered out of the body, stitched, and then re-inserted into a previously drilled bone hole. This reinsertion can be done through a portal, but is very technically demanding, precluding some patients from being a candidate for this procedure. Additionally, these devices don't prevent the tissue from sliding past the device as the device is inserted into the bone hole and/or when repetitive loads are applied to the soft tissue after fixation. Slippage of the tissue past the device may lead to decreased or failed fixation of the tissue to the bone and therefore an unsuccessful repair.

Therefore, a procedure is needed that is simple, reproducible, and that would allow both beginner and experienced surgeons to perform the procedure. Similarly, the devices used in the procedure would be simple to use, cost effective, and marketable to arthroscopic and open surgery surgeons alike and configured to prevent the tissue from sliding past the devices.

SUMMARY

In one aspect, the present disclosure relates to a tissue repair assembly. The assembly includes an interference device and a fixation device coupled to the interference device, wherein the fixation device includes a coupling portion and a capturing portion. In an embodiment, the interference device includes threads on an outer surface of the interference device. In another embodiment, the capturing portion includes a semi-circular shape. In yet another embodiment, the capturing portion includes a first end having a hole and a second end having a hole. In a further embodiment, the interference device includes a cannulation. In yet a further embodiment, the capturing portion is a loop and includes a through hole. In an embodiment, the capturing portion includes a top surface, a bottom surface, and at least two grooves. In another embodiment, the capturing portion includes a through hole having a first opening on the top surface and a second opening on the bottom surface. In yet another embodiment, the capturing portion includes an opening and the interference device includes a tip, the tip extending through the opening. In a further embodiment, the first opening includes a rim surrounding the first opening. In yet a further embodiment, the capturing portion includes four grooves.

In an embodiment, the interference device is configured for engagement with soft tissue. In another embodiment, the fixation device is configured for engagement with soft tissue. In yet another embodiment, the fixation device is configured for engagement with the bone. In a further embodiment, the capturing device is open-ended. In yet a further embodiment, the capturing device is closed-ended. In an embodiment, the fixation device includes a shape memory material. In another embodiment, the coupling portion includes at least two legs. In yet another embodiment, each leg includes two ends, wherein one end is coupled to the capturing portion and the other end is coupled to the interference device. In a further embodiment, the coupling portion is coupled to the interference device via a snap-fit connection.

In another aspect, the present disclosure relates to a tissue repair assembly. The assembly includes an interference device and a fixation device coupled to the interference device, wherein the fixation device includes a proximal end and a pointed distal end. In an embodiment, the fixation device includes a channel extending a partial length of the fixation device. In another embodiment, the interference device includes a cannulation, wherein the fixation device is partially housed within the cannulation. In yet another embodiment, the fixation device is coupled to the interference device via engagement between surface features on the fixation device and surface features on the interference device. In a further embodiment, the fixation device includes a collar. In yet a further embodiment, the fixation device includes multiple pointed distal ends.

In yet another aspect, the present disclosure relates to a fixation device. The fixation device includes a base portion having a first leg, a second leg, and a groove located between the first and second legs; and a top portion extending from the base portion. In an embodiment, the device is cannulated. In another embodiment, both the first leg and the second leg include a pointed end portion.

In a further aspect, the present disclosure relates to a tissue repair assembly. In an embodiment, the assembly includes a fixation device having a base portion including a first leg, a second leg, and a groove located between the first and second legs, and a top portion extending from the base portion and an interference device coupled to the fixation device. In an embodiment, the fixation device is cannulated. In another embodiment, the interference device is cannulated. In yet another embodiment, the interference device is coupled to the top portion of the fixation device. In yet another embodiment, the interference device includes threads on an outer surface of the interference device. In a further embodiment, the interference device is configured for rotary advancement into a target tissue.

In yet a further aspect, the present disclosure relates to a method of tissue repair. The method includes preparing a hole in a bone; inserting soft tissue into the hole via the use of a fixation device; and inserting an interference device into the hole.

In an embodiment, the fixation device includes a base portion having a first leg, a second leg, and a groove located between the legs, and a top portion extending from the base portion. In another embodiment, the soft tissue is located within the groove of the fixation device when the soft tissue is advanced into the hole. In yet another embodiment, the method further includes applying tension to the soft tissue prior to inserting the interference device into the hole. In a further embodiment, inserting the interference device into the hole fixates the soft tissue to the bone. In yet a further embodiment, the interference device includes threads on an outer surface of the interference device. In an embodiment, the